COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

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Australia's Pay TV: Death Wish?

Pay television in Australia has discovered new ways to make mistakes costing tens of millions of dollars per month. There are two lessons to be learned from their mistakes:

1) It is far easier to commit your pay TV business to expensive programming than it is to rectify the mistake, once made; and,

2) The technology chosen to deliver the pay television programming can easily cost your firm several times as much in practice as it appeared it would during the planning stages.

When you pay too much for programming (a habitual mistake, it seems, learned from Australia's VHF national television networks) and you discover too late that delivering the pay TV services is far more costly than you budgeted, whatever profits you may have projected on paper at the launch of the business quickly disappear.

Australia's three 'national' pay TV firms have combined weekly losses estimated to be in excess of A$15m. Cable operators Foxtel and OptusVision have pockets deep enough to hide these losses for at least the time being. Satellite and MMDS delivered Galaxy has been operating cash starved from its inception and as reported in CTD for March 29 (see issue 9602, p. 6), for every new customer the firm has signed up it has been swallowing A$980 in actual costs to deliver the service to the new subscriber (see "How Losses Compute," here).

Galaxy losses have been "managed" in traditional ways:

1) The firm reportedly owes significant suppliers such as Pace (supplier of the Galaxy satellite receiver package) amounts as great as A$20,000,000 (the equivalent of owing for 40,000 Pace receivers).

2) Staff cuts have been staged from January with each new stage cutting deeper and roaming higher into the hierarchy. Top level system planners and others responsible for the anti-piracy security of the satellite and MMDS signals were the most recent to be let go (mid-April).

3) The 'ground troops', those subcontractors who do the actual installations in the field for new customers, have been told they must reduce costs and cut their own time spent on each install job or face being dropped from the 'approved' subcontractor lists.

Still, even after massive cut backs Australis was writing cheques each week totalling an estimated A$5m more than it was taking in. Financial analysts familiar with the situation believe Australis would require as much as A$750,000,000 to carry it through until the incoming cash exceeded the outflow. That computes to the Galaxy service operating in the red for 24-36 months (2-3 years). Australis had a more immediate problem than 3 years of deficits; payroll next week and suppliers growing increasingly nervous about their overdue statements. Galaxy needed money, substantial money, **now**.

Ownership of Galaxy is extremely incestuous. Fox and Telstra (who operate together in the cable TV venture known as Foxtel) are seriousd co-owners and it turns out a significant customer for Galaxy. Also involved as significant owners are US cable giant Telecommunications Inc. (TCI), US based but internationally operated United International Holdings (UIH) and US firm Lenfest Communications. Australis/Galaxy first went to its corporate owners for the cash it required to stay operational. A package involving A$250,000,000 was put to Foxtel and TCI. The two would gain additional stock in Australis in return for the money. Foxtel was the key because in addition to being a stockholder in Australis, the cable network now being rolled out by Fox and telephone company

GALAXY USER'S LOG:
Fiscal Irresponsibility or Poor Technical Choices?

CTD has been tracking the progress and performance of the Galaxy service since its inception (see CTD April 1995, issue 95-4-17, "Australian Pay TV: Galaxy Struggles to Launch"). Galaxy's MMDS (microwave) distribution service has been fraught with costly technical problems (CTD 95-5-18, 95-9-22). Their Optus B3 satellite delivery launch has been equally troublesome and in particular the choice of Pace IRD (integrated receiver decoder) units (CTD 95-10-23) has been extremely expensive to deal with.

What follows is a log maintained by a Galaxy satellite subscriber in the Sydney area following his own installation in December. As you read this, keep in mind his home paid Galaxy $19.95 to have the satellite dish system installed and $39.95 per month for the basic programme service.

Tuesday December 5, 1995

Galaxy installed; we have 2 Pace DGT-400 decoders because we have two television sets. Fault showed up that evening on decoder 1, signal disappeared and screen displayed following text:

"Searching for default frequency"
"No signal"
"Searching for signal at 12438 MHz"

I powered off the decoder and then turned it back on after a minute. Now neither decoder would work. Turned both decoders off for 30 minutes and when turning back on message displayed on both read "*Searching for signal on 12438 MHz.*" I want to bed.

Wednesday December 6, 1995

Before going to work, turned both decoders back on and both worked. Then 1st decoder failed again ("*Searching...etc.*"). I turned it off, waited, and turned it back on. Now both decoders quit again so I turned them off and from work telephoned Galaxy service line (8:45am). After waiting 30 minutes on 'please hold' I hung up. Tried again 11:30am and waited on hold for 55 minutes. The lady I spoke with suggested I try the following:

1. Take out CA (conditional access) module and smart card
2. Turn off at power point
3. Wait 30 seconds
4. Turn on, reinsert CA module and smart card
5. Wait for horizontal green line on front panel display
6. Press red button on remote

I tried this process after arriving home at 7:30pm and both decoders worked, briefly. Then the second decoder began to lose signal and would display "*Please reinsert CA module*". I tried this, it did not help. I tried swapping the CA modules between decoders and the 2nd decoder always showed the same problem, apparently eliminating the CA module as a fault. If I left everything alone, eventually the decoder would work again on its own, briefly.

Thursday December 7, 1995

Turned both decoders on at 7:12am and the same problem(s) repeated. I telephoned Galaxy at 8:50am, waited on hold until 9:30am. A technician would come to assist me "within the next 3 or 4 days." Later someone telephoned from Galaxy to say a technician would be here, today, at 3:30pm. He arrived on time, changed out both decoders. I learned he had driven here from Campelltown, nearly 2 hours drive time, to fix this! When he left everything was working.

Friday December 8, 1995

Arrived home from work at 7pm and changed channels on the 2nd decoder. The display came up, "*E-23 - Channel is currently scrambled.*" I telephoned Galaxy and waited on hold 60 minutes. While waiting I took out the smart card and reinserted it which brought back the picture on this channel. I decided to wait out the hold anyhow and after explaining what was happening was told I did the right thing although I could have also turned the box off and the back on again for the same result.

Saturday December 10, 1995

At 7AM the 2nd decoder again displayed "*E-23 ... etc.*" I turned off the power and it worked when repowered. Later arriving home from work at 7pm I found the same fault ("*E-23 etc.*") and by swapping the two smart cards was able to get the unit working again.

Sunday December 10, 1995

Same problem with E-23 notice only this time turning the units off and on, or switching smart cards produced no reception on 2nd unit. And 1st unit is now losing signal periodically.

Monday December 11, 1995

E-23 notice still on 2nd decoder, 1st decoder still cycles from reception to no reception. Telephoned Galaxy at 9:43am and a new telephone system advised me, "Your call should be answered within 6 minutes. I got through at 9:55am (12 minutes) and finished at 10:12am with a promise of a service call at 10AM tomorrow. I note in passing these long calls are all toll free, as the service centre is in Adelaide.

Tuesday December 12, 1995

Technician arrived on schedule providing a new (to me at least) Pace DGT-400 for the intermittent 1st unit, and a new CA module for the 2nd unit. I learned he lives a 15 minute drive from my home.

Wednesday December 13, 1995

Now the 1st decoder (replaced yesterday) has the same fault as the replaced unit; loses signal momentarily. I called Galaxy at 9:22am and the recording advised "You will be answered within 5 minutes." I spoke with a service rep at 9:29am and a new technician service call was arranged for Friday at 8am.

Thursday December 14, 1995

3:56pm, a technician telephoned me to make an appointment for 8:15am tomorrow. I told him I already had an appointment for 8AM but he ignored my statement.

Friday December 15, 1995

8AM, technician arrives to replace the CA Module in the 1st decoder. 8:20am, a second technician arrives so I was in fact double entered on the service call list.

Saturday December 16, 1995

All day the 1st decoder continues to lose signal for up to several seconds time on a fairly regular basis.

Sunday December 17, 1995

I telephone Galaxy at 10AM and a recording said I would be on hold 1 minute. I explained the problem and was told I would be called on Monday as the service department was closed for the weekend.

Monday December 18, 1995

2:43pm, no call from Galaxy so I called them again. This time the recording said, "Your call will be answered in turn."(My turn came at 2:55pm and was told I would be called at some unspecified date to make a service call appointment because "*People with no signal problems are being given priority*." My intermittent reception was not priority.)

Tuesday December 19, 1995

I tried to call starting at 5:45pm but the lines were engaged until I finally got through at 6:06pm. "Your call will be answered in turn...," which came at 6:22pm. I learned they had a record of my complaint, but, "We are very busy with service calls in Sydney and I don't know when you will hear from us."

Thursday December 21, 1995

Phoned Galaxy at 9:31am and heard, "Your call will be answered in one minute." It was, but the message was the same: "We don't know when we can get to you."

Friday December 22, 1995

Called at 9:07am and again heard "One minute" which was again accurate. Now I was told "We will see what can be done." At 1:58pm I received a call from Galaxy advising, "We are snowed under with (service) calls, *the average wait time is presently 2 weeks*."

Saturday December 23, 1995

A Galaxy tech called at 1:35pm and said he would be here in 10 minutes. He was and swapped one decoder. On the new (to me) decoder I was watching channel (number) from 5pm to 6:30pm but lost the service between 5:08 and 5:22pm. I decided to endure the problem having now had so many contacts and service calls that were it not for this log I would have lost count long ago.

Monday January 8, 1996

After changing channels on the 1st decoder from 10 to 11 (which is BBC World, one of the channels not normally available to satellite viewers) everything went crazy. Normally if you select a channel that is not available the screen displays the text message, *"E10 channel is currently scrambled"*. This time it simply displayed briefly and then went blank. Eventually it showed new text, the infamous, "*Searching for signal at 12375MHz*". The second decoder was operating OK but the first had failed, again. I turned power off on both decoders, as instructed previously, and after 20 minutes repowered. Both now worked again until I tried to change channels on the 1st decoder. Again, it displayed, "*Searching for signal... .*" I again powered both decoders off and when I repowered them on neither would work. The displays showed:

"*Searching for default frequency,*" and,
"*No signal,*" and,
"*Searching for signal at 12438MHz.*"

I tried leaving the units off, turning them back on, several times that day with the same result. At 10:50am I called Galaxy and the line was engaged until 10:56am. I was placed on hold until 11:12am and then told the service department is busy but they promised to call me back within 48 hours. I tried to explain that I had no signal and have until this point used six different decoders. I then offered that one of the many technicians who had called on me lived but 15 minutes from my home and they suggested I call the tech directly! I would have gladly done so if I had his number. The person I was speaking with turned out to be in the Customer Service Centre in Adelaide which was taking complaint and service calls because the regular service department was overloaded. At 1:40pm I tried a different approach, calling the Sydney administrative number. They put me through to the Service Despatch desk and Raoul promised to get me a service tech as soon as possible.

Thursday January 11, 1996

Three more days and having not heard from Galaxy I again called the Sydney Administrative office at 9:50am. No one was available so I left a message. I then called the toll free (800-555-111) normal service number at 9:54am which was answered at 9:57am. This time I mentioned Raoul's name and the person on the other end advised Raoul would call me. He did, at 11:10am. Raoul said he thought I would call back if I was still having problems, and suggested I try both units while one the phone to him. I did, and wonder of wonders they both immediately came up. He promised to send out a tech anyhow at 1:30pm tomorrow. Before nightfall the 1st unit shut down again reading, "*No signal*" and "*Searching for signal at 12438MHz*" and this repeated throughout the day with signal losses of 5 seconds to 15 minutes time. Watching a movie was impossible (reception failing 5 times in the first 30 minutes, 3 times in the next 30.)

Friday January 12, 1996

I made a trip home arriving at 1:05pm to meet the technician. The 1st decoder was telling me, "*Searching for signal...* ". The tech called to say he was running late. At 2:25PM the technician and the picture arrived simultaneously (how they can do this is a mystery to me!). This time the tech replaced the LNB (at the antenna) and the 1st decoder.

"*I am pleased to report that since this final visit on January 12th the service has been operating fine. It seems now that a faulty LNB was the major cause of my problems from the very beginning, although often the problem only occurred on one decoder at a time. I am fussy about quality and when you are paying for a service I believe you are entitled to expect it to work as well as the signals that are received free-to-air.*"

Telstra depends upon Australis for access to many of its cable programme packages. If Australis did one thing correctly, it was their early deals ability to tie up programming from major international cable programmers (including movies, sports, and general entertainment channels). Their movie contracts with "the four major US film producers" significantly pre-empted Foxtel and competitor Optus Vision from gaining access to the same movies for their cable networks, directly. But Foxtel, in a move to get around these contractual impediments to it obtaining similar or the same programming directly from the programming sources, surprised many by signing a deal last September giving it access to 8 of the Galaxy service channels for cable distribution. Foxtel believed

How Losses Compute

Galaxy has subscribers, via MMDS and DTH (satellite). Their last formal statement claimed 140,000 subscribers but failed to detail how it includes Foxtel cable subscribers in their count (i.e., is a Foxtel cable subscriber, watching Galaxy programming through Foxtel, counted as a "full" subscriber or as a proportional subscriber?). Galaxy charges most of its subscribers A$39.95 per month although the price for new subscribers was raised to $49.95 per month in March. So optimistically we say they have 140,000 subscriptions at $39.95 per month. That is a gross income of A$5,593,000. During January and February they added on average 15,000 new subscribers each month. For the installation fee they collected $19.95 or A$299,250 each month. However, to install those 30,000 subscribers they had to pay on average $980 for labour and materials; a total cost of A$29,400,000. Thus in a model month, such as February, they took in $5,593,000 for subscriptions plus $299,250 for installations or A$5,892,250 total. Against that they had subscriber equipment capital costs each month of $14,400,000 above and beyond their direct revenue. If they had continued to install at$19.95 per home, for every 1,000 new homes they would be cash-short $9,600,000. This is the crux of the Galaxy problem: How to fund their present-term cash shortage as they continue to grow.

it needed these 8 channels, badly, and for this they were willing to pay a premium to Australis/Galaxy.

The precise terms of this agreement are not public record (1) but various reports appearing in the Australian business media believe Galaxy is to receive A$4.5B from Foxtel for these 8 channels over the first 25 years; (up to) A$180,000,000 per year (up to $15,000,000 per month). If Foxtel should ever grow to serve 1,000,000 homes, this would amount of A$15 per home per month for these 8 channels and that $15 per home has to come right off the top of the (present) Foxtel monthly cable charge of $39.95 per month.

Having tied up the 8 channels it considered so important to success, by October Foxtel was making new sounds; it wanted to merge Foxtel and Australis into a single new corporation (see CTD 9509, p. 14); a giant A$1.5B conglomerate marrying telephone and interactive data and television into one source. In October it looked as though it could happen; by January the Australian government had said no and on reconsideration April 19th it said a final "no"; no marriage. The merger was especially important to Foxtel because if they could become a part of the Australis operation, through merger, they would then reduce from $15 per home per month to $10 per home per month their cost for these 8 channels of service. In the 25 year agreement term, this saving might amount to A$1.5B.

But if Foxtel paid Galaxy $10 per home per month rather than $15, that would instantly mean Galaxy would be short of $5 per home times the number of Foxtel cable homes in revenue each month. And Galaxy needed every dollar it could find just to survive. From the Galaxy perspective, if Foxtel did merge with them, Foxtel would somehow have to find some additional source of funds to keep Galaxy afloat. The $5 per cable subscriber per month "premium" (over Galaxy's actual cost for programming) has been important to Galaxy and as Foxtel grows it would be increasingly important.

When Australia's ACCC turned down the merger (on grounds of media concentration, which certainly could have endangered the third entrant Optus Vision), it was apparent both Foxtel and Galaxy had anticipated approval. A number of employees had already shifted positions and there were obvious signs of consolidation. Early staff dismissals on both sides, during December, pointed towards consolidation of duties. A new plan emerged; if a merger was not possible, Australis/Galaxy would reapportion itself by issuing new stock for the existing corporate partners to buy into. The goal was to raise an additional A$250,000,000.

The major negotiations were with Foxtel and TCI. A Foxtel spokesperson would later comment, "*We didn't think it was a good deal and we have no belief in Australis's fundamental business. This*

1/ The Sydney Morning Herald (April 26) reports Australis nets above programme acquisition costs A$4.60 per cable home per month but there are apparently minimum's which makes the cost per cable home significantly higher at this stage of the Foxtel development. One document shows that Foxtel guarantees project the cable firm having 550,000 subscribers in 2001.

(proposal to raise A$250m) *is not a solution to Australis's fundamental problem. It buys time and nothing else.*"

Foxtel already owns more than 8% of Australis; an investment in a company which they believe is operating a flawed "fundamental business?" Which part of Australis might be "flawed?"

Galaxy is unlike any other pay television business in the world. It has adopted the policy of owning every component part of the system from the originating video source to the plug that enters the subscriber's TV receiver. This is very up-front capital intensive, the "cable television mind-set" or in a sense, wireless cable. But there is a vast difference between a cable system's capital expenditure to wire a community and Galaxy's attempt to go "wireless" to a nation.

Some comparisons:

1) In New Zealand Sky Network provides a set-top decoder box, aerial, lead-in wire and the installation for each subscriber. Sky also retains ownership of the equipment although it seldom (if ever) reclaims anything other than the actual decoder from a home that discontinues service. Sky has NZ$250 invested in each decoder plus (an additional) NZ$100 invested in each installation.

2) In areas where MMDS operates, the decoder + aerial + wire + installation of the equipment averages NZ$600 if a modern state-of-the-art encrypted MMDS system is operating. Where the MMDS system elects not to encrypt its transmissions, the cost comes down to the NZ$300 per subscription home range. MMDS operators almost always retain ownership of the receiving equipment as well.

3) In a cable television situation, the cost to pass an operating cable system past a potential subscribing home varies upward from NZ$300. If 1 home in 3 subscribes, the cost per actual subscription home ranges upward from NZ$900 ($300 x 3).

4) In a DBS/DTH (Ku satellite direct to home) model, such as DirecTv in North America and soon in Japan and South America, the subscriber purchases and pays for the installation of their receiving system (typically in the range of NZ$1,155).

5) With Australis/Galaxy the programmer purchases and supplies to the subscriber every segment of the receiving system. The cost for this varies upwards from NZ$1,100 per subscribing home.

On paper it would seem that a "wireless cable" service using some type of broadcasting frequency range (it matters only slightly whether we are talking about VHF, UHF TV channels, MMDS or satellite) is preferable to hard wiring a community with coaxial (fibre) cable since only those homes that actually subscribe to the service result in a capital cost to the operating company. It would also seem that if the programmer provided this equipment at a consumer cost that was far below the actual cost, sales of the pay TV programming would grow much more rapidly than if the subscriber were forced to purchase the equipment up front for the full cost of the equipment.

The planning of delivery technique is critical to any pay TV venture. Galaxy always knew, for example, that if they reached their own marketing projections (in May of 1995, one year ago, they were forecasting 160,000 homes served by today; a target they are likely to reach by the end of this month), they would require 160,000 times approximately $700 **(2)** per home for the purchase of equipment and services necessary to serve these homes ($112,000,000 total). In effect, they needed $112,000,000 "in the bank" to cover their own projected sales growth. The impact of dropping the installation fee to $19.95 was to add an additional A$22,400,000 to that $112,000,000.

If we now assume their growth will double again in the coming 12 months, and they continue to charge $199.95 for the installation, then Galaxy is facing a shortfall of 160,000 (new subscriber homes) times $800 over the coming 12 months; $128,000,000.

Galaxy has attempted to adopt a terrestrial MMDS "wireless cable model" to a combination of MMDS and satellite delivery. They have done so without regard to the two-times cost increase which providing each subscriber with satellite (DTH) equipment involves. To further complicate their

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2/ $700 per home: Galaxy, one year ago, was charging $299.95 for installation, a number that ultimately failed to attract more than 13,000 subscribers. At $700 per home cost and $299.95 per home charge, they came to the actual $1,000 range cost of each installation they are now paying. Between September and February they dropped the installation fee to $19.95 but have since returned it to $199.95.

capital cost situation, the technical problems plaguing the satellite DTH receiving packages have added hundreds of dollars in actual cost to each installation (see "Galaxy User's Log," p. 3 here). If we assume a minimal cost to Galaxy of $50 for each of the 5 service calls reported by our 'model user', the true cost of this one installation just went up to more than $1,300.

Galaxy has reached agreement (April 19th announced) with Kerry Packer's PBL, The Guiness Peat Group (GPG), and US stockholders UIH and Lenfest Communications that raises A$200,000,000. The Australian media characterise this new infusion of funds as a "rescue package" designed to save Australis/Galaxy from going under. Australis said of the $200,000,000, "*It will allow us to keep operating for another six months while we work to secure longer term financing* (of up to A$750,000,000)."

It is apparent that Galaxy is not merely short of money because of subscriber equipment capital investment since it expects to chew up A$200,000,000 in 183 days (a rate of A$1,092,896 per day). The only way it could be breaking even (i.e., not losing money on a day to day basis from general operations) and still expect to require A$200,000,000 additional capital in the next six months is for the firm to be anticipating installing 1,366 home DTH systems every day for the next six months (or, 41,120 new subscribers each month). As this is 270% more new subscribers than it has managed in any month to date, the conclusion is inescapable; Galaxy is losing big money every single day, before the drain of subscriber capital equipment costs.

How much money is Galaxy likely to be losing?

At the continuing rate of 15,000 new subscribers per month (a rate that may not be sustainable since they raised their installation fee from $19.95 to $199.95), in a 30 day month Galaxy would be installing 500 new homes each day. At $800 subsidy per home for the capital costs over and above the $199.95 installation fee collected, Galaxy requires $400,000 per day. Yet their own numbers claim they will require $1,092,896 per day; a $692,896 difference. Someplace above and beyond their dollar loading of the subscriber equipment, $692,896 is slipping through the cracks each day at Australis/Galaxy. Saturday and Sundays included.

When advised that Australis had worked out an emergency funding arrangement with PBL, GPG, UIH and Lenfest, a Foxtel spokesperson said, "*This is not a solution to Australis's fundamental problem.*"

Indeed.

A further complication to the Australis "rescue mission" is the resulting concern of US holders of Australis high yield bonds. Bondholders raised US$175m to help launch the service. Prior to the rescue, A$50m in bank debt stood between the bond holders and the assets of Australis. If as a result of the rescue Australis accumulates additional bank debt, the bond holders will be pushed further down the ladder from the physical recoverable assets pledged as a condition to their original bond purchases. Salomon Brothers is investigating raising A$300m to complement the rescue package, help Australis believes it needs after they have gone through the rescue fund of $200m over the next six months. On April 26th, Australis public shares dropped 9% in value after rising sharply on news of the rescue funding.

Palapa C1: Broken, To Be Replaced

CTD for March 29th reported early test results with Palapa C1 satellite, noting dishes as small as 2.4m were producing high quality reception from several of the C1 transponders. Sister publication SatFACTS Monthly for April 15th, with the added advantage of three weeks of intensive reports gathered from throughout Asia, central and south Pacific, reported, "*This is one weird bird*" and noted, "*If this is the type of coverage* (satellite builder) *Hughes and* (satellite operator) *PTTI intended, there were some very unusual objectives at work.*"

In a nutshell: **C1 is broken**, perhaps significantly broken, and in all likelihood the satellite will be early retired. Perhaps as soon as August.

C1 appears to have three major problems, none apparently correctable from the ground by remote control.

1) The satellite is not oriented properly. Satellite orientation is all important; where it "points" determines where the transmit (and receive) antennas on board point. Mis-point the satellite and so too are the antennas mis-pointed. The error is small but in a world where fractions of a degree are accountable, several degrees is a major mistake.

2) The satellite has a faulty powering system, by some reports as much as 50% of its power capability is mal-functioning. This means less current (operating power) available for the 24 C-band and four (wideband) Ku transponders on board. Solution one: They turned off the Ku portion, totally. Net result of this? Planned (DTH) Ku band use is lost. Solution two: Power down (i.e., operate at less than full power) the remaining (C-band) transponders on board. Net result: Weaker signals on the ground for all transponders, by some accounts 4 to 6 dB for many transponders (thus requiring larger antennas for receive than originally planned).

3) The satellite's C-band "feed" antenna system is not functioning as designed. This means some of the transponders, especially those on vertical polarisation, are being directed at areas on earth where they were not intended to be. Net result, lower signals where they were intended to be, unusually strong reception in areas not originally planned for coverage.

The good news is that Palapa C2M, already scheduled for launch (late April via Atlas launch vehicle), will be available for testing and likely use as a full replacement for C1 by early June. But the Indonesians and Hughes are being very careful not to predict how much better C2M may be. They originally had several options:

1) Collocate C2M where C1 is now located (113E) and attempt to transfer traffic from C1 to C2M in one grand 72 hour transfer. They have, for now, elected not to do that for several sound reasons:

a) Older B2P, the original 113E bird, is still "in the neighbourhood," and although now in increasingly inclined orbit, held there just in case a new problem develops with C1 before C2M can be put into regular service.

b) Flying two collocated satellites is one thing; flying three from the same orbit position is quite another challenge, especially when one of the three (C2M) needs to undergo extensive testing before it is pressed into even temporary service.

2) Place C2M at "some other orbital location" for testing and checkout. The options are to collocate it with B2R at 108E, B4 at 118E or at 150.5E where Indonesia holds a "spare" orbit spot. CTD is advised the 150.5E location is the most likely "test location" by one Indonesian source.

a) Such testing at any of these locations could be temporary. Ideally, C2M would go to its final orbital location for testing since the antennas on board would be remote adjusted (within a limited range) for this location. Testing it at locations such as 108E or 150.5E will produce similar but not identical results to having C2M ultimately at 113E.

As CTD goes to print, here is the unannounced plan. C2M will be placed into a location where it can be fed (and operate with) as many of the presently C1 available services as possible. This temporary-position testing will last for no less than 30 days and will allow the on ground eirps to be carefully measured and plotted. From these measurements will come a final plan for orbital deployment of C2M. It could be 113E as a permanent replacement for C1, it could be at some other location. There is no way to forecast the final location of C2M at this stage except to note that if C2M has none (or fewer) of the C1 problems, it will become the new primary satellite for the Indonesian Palapa system from approximately mid-August onward. Or at least until C3 launches in 1997-1998.

DVB Compliant Receivers: First Consumer Units Arrive

Packed in a suitcase with last week's dirty clothing, a traveller from London to Melbourne arriving April 30th hand delivered the first two MPEG-2 DVB Compliant satellite receivers to industry distributor Skandia Electronics. A team of engineers waited anxiously for the suitcase to be cleared through customs to rush the receivers to a test facility in suburban Melbourne where AsiaSat 2 DVB Compliant MPEG signals from the Deutsche Welle European Bouquet have been under observation on a spectrum analyser since April 15th.

If all goes as planned, one of the two receivers (both prototype units manufactured by Pace Electronics, UK) will be in an airfreight courier pack to our sister publication SatFACTS Monthly before you read this report. And if that happens as planned, the May 15th issue of SF will report on our testing of this unit (if the receiver misses our deadline, the report will appear in SatFACTS for June 15th).

The saga of consumer version MPEG-2 DVB Compliant receivers has been long and tortuous. German international broadcaster Deutsche Welle (see CTD 96-01-24, p.2) announced the (April) availability of five European TV services (French MCM and TV5, Spain's RTVE, Italy's RAI Uno and DW itself) during the late January SPRSCS '96 show. But there has been a nagging problem: No manufacturer was ready to build and ship reasonably priced DVB Compliant receivers. The saga of DVB receiver status has been an ongoing theme in SatFACTS Monthly and very little of the news has been good. Without reasonably priced receivers DW's European Bouquet service is, for the moment, essentially a "closed loop" service reaching almost none of its intended audience of cable, SMATV and DTH viewers.

Even "unreasonably priced" commercial receivers are nearly impossible to purchase; English NTL/DMV commercial models developed for broadcast use are available in very small, long-lead-time quantities in the NZ$4,400 range, several German firms promise delivery in 90-120 days from date of order in the NZ$4,000 range and Scientific Atlanta has begun to ship their 9223 commercial model at NZ$2,350 but only to established accounts already using the prior 9222 non-DVB Compliant model for PAS-2 programme reception (this is a part of the now in progress upgrading of PAS-2 digital from MPEG 1.5 to MPEG-2 level service). A Scientific Atlanta "consumer version" (model 9233) has been announced but there is no actual production of this unit presently scheduled before the 3rd or 4th quarter of this year. The announcement of this receiver has created a defacto "consumer price level" because Scientific Atlanta has repeatedly said they will sell the unit in the US$600 range. If this (NZ$990) is to be the net cost to their distributors, it follows that satellite dealers would pay around NZ$1,210 per receiver and retail consumers would pay around NZ$1,690.

Australian Skandia has teamed with an unnamed European group to meet the "minimum order level" established by Pace before they would actually build a consumer grade DVB Compliant version, the minimum quantity believed to be a total of 5,000 units. The actual quantity for which Skandia has committed is not known.

Pace model DGT-400 units, designed for the Australian Galaxy service, forms the foundation of the new receiver design. Dozens of DGT-400 owners in Australia and elsewhere have attempted to use this receiver for reception of AsiaSat 2 MPEG-2 transmissions (now routinely in operation from STAR TV - 3 channels of service, and Deutsche Welle - 5 video programme channels) but without success. The DGT-400 has a "software block" built-in to prevent its use for non-Galaxy service reception and while some Australian Galaxy sources claim to know a way around that "block" it has never been shared information outside of Galaxy, if in fact it is really possible.

Skandia's Leon Senior tells CTD, "*We have learned from the Galaxy DGT-400 several modifications to the basic receiver which will be incorporated into the DVB Compliant model.*" Senior explains that the high failure rate of DGT-400 units experienced by Galaxy, usually a power supply fault, has been corrected with the new model. Senior has been told to expect air shipment of his first resale quantity of DVB receivers on approximately the 15th of May. Pricing will be A$822 (+ tax where applicable) to established satellite dealers/retailers and the suggested user list price is A$1,354 (NZ$1,490) in Australia. Skandia's authorised New Zealand distributor, Bay Satellite TV Ltd. (tel 64-6-878-9081), will because of gst and freight be forced to charge more for the units; extra costs anyone purchasing from Skandia would also incur.

Interest in New Zealand in the Deutsche Welle European Bouquet has been high and the German broadcaster has been routinely forwarding enquiries they have been receiving from New Zealand residents back to New Zealand affiliates who signed up for DW service during the SPRSCS '96 show in January. An especially interesting sub-project is underway in Wellington. Because of the low look angle of AsiaSat 2, very few Wellington locations will be able to receive the satellite service directly. A co-operative made up of Wellington area satellite hardware sellers is putting together a system to receive the five European Bouquet services from a properly located Wellington site, then redistribute the service to Wellington Embassy, trade office and residential locations using 13 GHz point to point microwave. The model for this is the microwave distribution service package designed by cable operator Civic Enterprises and in use in Greymouth and Gisborne. The hardware for such "cell site" reception costs approximately (NZ)$1,500 plus installation labour; decidedly less than even a modest satellite DTH system. By prorating the cost of the more expensive master transmission site amongst some number of cell-site users, there is a method here of solving not only low look angle As2 reception problems but a business opportunity to create regular monthly ("wireless cable") income for an entrepreneur. And since such cell-sites require antennas typically in the under 1m range, restrictive Wellington regulations prohibiting satellite dishes are avoided. This technology, as employed by Civic Enterprises, is capable of delivering as many as 7 TV programme channels to a single location (talk with Nigel Clough at 64-4-293-2058 or John Lynam at 64-6-878-9081).

As CTD goes to press, the only in-New Zealand known to us DVB Compliant MPEG receiver is an NTL supplied commercial unit sitting at Rotorua's Geyser Television. They are an affiliate of DW, already taking a daily (DW) news feed from Intelsat, and signed a more extensive affiliation agreement during the January visit of Deutsche Welle. Unfortunately, Geyser TV is unable to receive the DW AsiaSat 2 TV service at its present satellite dish location (blockage by surrounding terrain) so the receiver which so many hundreds are anxious to "have a play with" is not capable of being utilised by the TV station. Alternate use plans for the receiver are in process.

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TECHNOLOGY BYTES

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May 01, 1996 / Issue 96-03-26

Satellite TV and Radio

Palapa C1: We report it is "broken" (page 9, this issue) and that the Ku band portion (4 transponders, each 72 MHz wide) have been turned off because the power system for the satellite is operating at approximately 50% of capacity. There is more to this. Indovision, the company operating a four channel pay TV analogue encrypted service (CTD 9602, p. 8) was to take one of the Ku band transponders for a new 15 channel movie and sports programme package to be delivered using some form of MPEG-2. With the death of Ku band service on C1, the two years of advance planning by Indovision into this new Indonesia + SE Asia service is now quite worthless. Unless: Unless C2M satellite proves to be an adequate replacement.

Indovision C-band encrypted service on C1 is subject of new scrutiny now that Indovision Scientific Atlanta manufactured CDE-2000 decoders are flowing routinely into many Pacific areas. Service includes B-MAC encrypted programming of HBO Asia, ESPN, Discovery and TNT + Cartoons. Until last August the official Indonesian street price for the CDE-2000 decoder was US$495 and the official annual subscription charge for the programming of all four channels was US$495 ($41.25 per month). After several years of operation the service had been only modestly successful; 10,000 subscribers reported which was on the surface not enough to even cover the cost of the uplinking and transponders. From August onward the street price for the CDE-2000 was dropped to US$310 while the per month programming package dropped to US$22 ($264 per year). By comparison, the CDE-2000 units with a year's programming paid in advance, selling in the "grey markets" of the Pacific and Australia vary between US$1,125 and US$1,500 (as against US$584 for the same package in Indonesia). Some mark-up is understandable: Grey market operators must travel to Indonesia to acquire the boxes plus programming and then haul the CDE-2000 unit(s) back to their point of origin (and pay duty for the imported unit if not the programming), and then arrange for shipment to yet a third point to the ultimate consumer. The lower Indonesian prices seem to be working; latest reports are that the subscription rolls have grown to more than 29,500 since the August pricing cut.

Transponder pricing, per annum, in the Pacific and Asia have escalated from US$1m per year to more than US$2.5m per year in the past 18 months. Forecasters tell us there will be between 116 and 156 Asian coverage transponders on offer (available, probably all taken) by the end of this year; a number forecast to rise to more than 700 by the year 2000. By comparison, North American transponders (with more than 500 transponders now available) are running in excess of US$2.6m per year while in Europe the much sought after Astra European slot transponders go for as much as US$8m per year. The next big growth area, after the Pacific/Asia? Africa and in particular Ku band downlink frequencies for that continent.

Long March launch failure in February which destroyed Intelsat satellite has been followed by wholesale launch contract cancellations by others who were on scheduled list for similar launches. Intelsat has cancelled two additional launches with Long March while AsiaSat has dropped planned launch of As3 bird (in favour of Russian Proton launch).

JC-SAT3 is now in use for test transmissions on Ku band by DMC/Perfect TV. The testing of digital television delivery, intended for cable, SMATV and DTH reception, will continue through September-October and then convert to a full commercial operation. One major unknown: Will Perfect TV operate as a Japan-only service or broaden out to become "regional?" Insiders say the plans for regional service, including India and other physical areas yet to be selected are already past advanced planning. JC-SAT3 does have the onboard capability to cover New Zealand and Australia with 1m size dish DTH (or SMATV, cable) level Ku-band signals.

DMC may be first to have MPEG pay TV in the Asian region (via JC-SAT3) but it will probably not be the strongest firm in the business after midyear 1997. Satellite manufacturer and US DBS operator Hughes will be building on its extensive operating experience from North America's pioneering DirecTv Ku band DBS system (launched in June 1994) and its current launch of a full South American "Galaxy Latino" service when it kicks off regional DBS for Japan. Hughes has one approach that others will eventually adopt; their latest series of satellites use Ka band frequencies to inter-link directly between satellites. Thus a programme package uplinked in Los Angeles (for example) would go to a Pacific area satellite in the standard format, be delivered on the downlink to whatever area the satellite was designed to cover, and simultaneously be shot through space without touching the ground to a second satellite sitting over the equator above the Indian Ocean. There satellite number two would serve its intended downlink region, but squirt signal on Ka on westward to reach satellite number three sitting above the Atlantic. By avoiding repeated up/down links, the Hughes satellites save major operating dollars and make it possible for bundles of MPEG programming (up to several hundred programme channels in content) to circle the globe without ever touching down between satellites. When? Within two years at the outside. DirecTv Japan is owned by Hughes, Matsushita, Mitsubishi's Space Communications Corp (SCC), Dai Nippon Printing, and Culture Convenience Club. DirecTv Japan will use new Superbird satellite.

Untangling the NTL cord. English firm NTL, a prime developer of our current MPEG-2 technology base and a major supplier of hardware to Television New Zealand, is so complex in ownership and alliances as to defy description. This tangled web has become more important recently with the apparent fine hand of various Rupert Murdoch satellite activities increasingly surfacing as NTL (DMV) "policy." It has become impossible to separate NTL (DMV) "commercial policy" from News Corp long term planning and internal policy. Here is our best shot at explaining how it became an arm of Murdoch's empire: Prior to 1990, the British IBA maintained the transmission standard for British ITV. The 1990 Broadcasting Bill saw IBA disappearing and its assets became ITC and NTL. The NTL portion was a separate entity to look after the engineering and the transmitters for the former IBA. NTL also inherited the research centre at Crawley Court and this included all ongoing research work (at the time dealing with early MPEG-1 variations), and all IBA patent rights. Between 1990 and 1995, the various in progress research projects wound down to completion and many of the original IBA assets (physical and patent rights) were sold off. Separately, Pace and NTL negotiated an agreement to construct a factory at Eastleigh, Boyatt Wood which would design and manufacture digital equipment for both transmission and reception. With the Pace/NTL facility operating, Murdoch (News Corp) bought into the package for a reported 70m Sterling. As NTL (more recently renamed Digital Media Vision) controlled both the transmission (encryption) and reception (receiver) hardware patents, and Pace controlled the manufacture of the reception equipment, it was no surprise that News Corp bought in as a wedge to control which broadcasters would be able to utilise the first MPEG (now version "2") transmission equipment, and equally, where the receivers would be available for sale, and through which distributors. A recently issued DVM financial reports takes 2 full pages in very tiny print to attempt to explain who owns what rights and controls which activities within the Pace/NTL/DVM world. In truth, the explanation contradicts itself in alternate paragraphs and if this is the final word on this subject, then nobody really understands what has happened here.

Sky (Europe) is a primary beneficiary of the News Corp investment in NTL + Pace. Sky's present analogue 28 programme channel DTH (+ cable and SMATV) services distributed in Europe is on schedule to blossom to a 100+ channel service by midyear 1998. Not all 100 channels will be totally different in content; Sky plans to package approximately 50 channels on each of two beams giving viewers a time shifted option to view programming (i.e., same programme on two channels, time shifted several hours to allow for the several time zones that divide Europe plus western Asia). Sky's pre-tax profits for 1995-1996 are presently US$1m per day.

EMTV (Papua New Guinea) and scrambling. Several times in past year PNG's national TV service has advised they plan to encrypt their programming. In most recent statement, station management warned a Web Site publisher not to provide EMTV programming information to satellite viewers throughout the Pacific and noted, "*When our* (Videocrypt) *decoder is returned from UK after 1 May we will begin encrypting programming which is not created within our own studios*." That sounds ominous and threatening to those who have come to rely upon the EMTV service. The facts are quite different. EMTV has been under constant pressure from programme suppliers to limit its coverage to receivers within PNG; a difficult trick when you distribute via an international satellite. As EMTV reception grows more popular outside of PNG, local broadcasters in regions where EMTV is now being viewed become increasingly alarmed that programmes which they have acquired rights to broadcast locally are also carried by EMTV and often earlier in release date or time than the local stations elects. An example of this: Friday Night (League) Rugby, originating at Channel 9 Australia, is carried by EMTV. The same games are also shown on TV2 in New Zealand. At the start of the 1996 season, EMTV coverage ran as much as 30 minutes ahead of TV2 (i.e., TV2 was tape delaying the coverage). More recently, TV2 coverage runs on average 10 minutes ahead of EMTV indicating that it is EMTV that is tape delaying. This is one way around the copyright problem: By tape delaying "live" coverage a few minutes, EM TV can rightfully say that within New Zealand viewers have a preference to watch the games on TV2 (where received) than on EMTV since the EMTV coverage is delayed in time. The reality is that while EMTV might one day actually encrypt, before it does so it will need to gather together sufficient (Videocrypt) decoders to equip the thousands of PNG reception sites now using the service. In other words, to shut down viewing outside of PNG, first they have to ensure that within PNG there will continue to be service. That is both an expensive and technically challenging step to take given the remote location and wide geographic spread of the EMTV viewers in the home country. So for now, the station will continue to assure programmers it is stepping up to encryption, but in reality it will attempt to delay any actual routine encryption until it can migrate from analogue to MPEG distribution. In the short term, if you notice them "testing" a Videocrypt system, don't panic. It is all part of the game now being played.

Australian Sky horse racing trackside coverage, now available on Palapa C1, will add AsiaSat 2 coverage during May and then discontinue the C1 service sometime around June 1st. They also plan conversion to an MPEG format on AsiaSat 2 shortly after. The real news is that for non-commercial, non-public locations, they will now consider an annual subscription fee of US$2,500 for their service The user will provide his or her own IRD/decoder, however. This offer may not apply inside of New Zealand (NZ is not mentioned in the material CTD has reviewed) but it does apply in locations such as New Caledonia et al. (J.T. Murphy, Sky Channel [Australia], fax 61-2-452-4540).

China's CCTV is now distributed throughout the world using the global networking of PanAmSat with the addition of PAS-4 (Indian Ocean Region). CCTV used the occasion of starting service on PAS-4 to formally reveal plans to expand from 1 to 6 separate MPEG digital format service channels over the coming 12-18 months. A second all-English MPEG programme channel was originally scheduled to begin during May but now appears more likely to be late June or July.

Construction on the new, permanent, California uplink site for PAS-2 continues on schedule with a July 1 target for service start-up. PanAmSat has been employing a temporary uplink at Sylmar, California and the new 16.5 acre site is near Napa in northern California. PAS-2 receives four full-time television service channels (ESPN, CMT, Bloomberg and Fox Sports) plus a number of part time services via Sylmar.

Intelsat 177E, to be used by UIH programme packager to deliver 10 channels of North American/European CATV programming into Pacific in second half of this year (SatFACTS April 15, p. 22): Computations done by engineering department at Saturn Communications suggests users will require dish only 2.1m in diameter to create 11.80 dB CNR out of receiver. This is approximately 5dB "margin" for signal variations caused by antenna mis-pointing and other variables and it certainly will be in the "DTH class" if UIH opts to allow subscriptions to the service by individual dish owners. Barring that, cable TV and possibly SMATV firms will have very high quality MPEG-2 service with an extremely modest dish investment.

University of Auckland Unisat facility is adding a second satellite dish (4.5m Paraclipse Islander) to its system at the East Tamaki Campus. Use of the innovative satellite programming monitoring facility by various disciplines within the University has skyrocketed during the first 12 months of operation. The system is testing an MPEG encoder which allows video server stored or live on demand transmissions to reach suitably equipped PCs and MACs both on and off campus. This access to the programming by classroom instructors greatly expands the learning opportunities for the satellite receiving system users. The Indonesian Section of the Department of Asian Languages is the latest to benefit from the system with Unisat delivering daily programming from Television Pendidikan Indonesia (TPI).

Australian sources for new Pace DVB Compliant MPEG-2 receiver have begun marketing of the unit for advanced order status in anticipation of a mid-May delivery through importer Skandia Electronics. Example: Kristal Electronics (Townsville fax 61-77-253-407) is offering the receiver in quantities 1-9 at A$963 (plus Australia's 32% tax on satellite equipment), 10 to 99 at A$924 and 100+ at A$864.

Conversion from Scientific Atlanta D9222 (MPEG 1.5) to 9223 (MPEG-2) receivers for users of Sylmar, California uplinked services is now rescheduled to begin today (May 1st). Original announcement said April 1, subsequent announcements have pushed the delivery date of the new receivers back a week to ten days at a time. Those with D9222 units will receive their first official notice of the swap-out directly from the Sylmar uplinked programmer (i.e., typically CMT); no such notices have been received as to our press deadline so the details of the swap-out remain a mystery.

Competition in North American DBS (Ku band DTH) services is resulting in more channels for less money for subscribers. Latest DBS provider, AlphaStar Digital TV, is offering 91 channels of service including 9 premium (pay movie) channels for US$29.99 per month. Included are 30 DMX (all digital) music service channels. US$29.99 is virtually identical to what Sky Network (New Zealand) presently charges for 4.5 channels of service per month. Sky includes 1 movie, AlphaStar 9, Sky 1 sport, AlphaStar 7.

US DBS player Echostar has detailed number 3 and 4 satellite designs to surprise of many. Satellites, scheduled for launch in 1997 and 1998, will employ unique spot beam capabilities to allow "local TV broadcast service" into largest 50 US market centres. Concept is that local TV stations can better be delivered to homes in areas such as New York City or Los Angeles through satellite than with terrestrial transmission. Echostar would, using frequency reuse and spot beam capabilities on satellites, offer combination of local TV services plus satellite only programme packages on region by region basis. To date DBS viewers have been forced to install outside rooftop VHF-UHF aerial for local services. Move catches competitors in DBS field quite by surprise.

Canadian Anik E1 satellite had failure of "south solar array" March 26 greatly reducing power available to operate satellite, shutting down 26 of 40 transponders on board. Failure will have significant ripple effects on Canadian DTH DBS scheduled to start in June as there was already transponder shortage within Canada prior to loss.

Latest satellite TV user web site: http://www.ultra.net.au/-kristal out of Australia.

Digital TV and Radio

Television Piracy within Europe is the pointed topic for study in a Green Paper released within the European Community (EC). The paper urges that all broadcasters conform to a standardised (DVB) compliant MPEG-2 format, and further urges that CA (conditional access) systems be standardised as well to allow manufacturers to get on with the business of designing and manufacturing a single format digital video receiver for both satellite and terrestrial applications. Woven throughout the paper is a review of the present numerous analogue encryption schemes employed within Europe and the steps that have been taken by "hackers" to subvert the security of the various systems. On this point the paper urges that through the EC all member nations adopt uniform legislation that spells out the "rules" for dealing with programme theft. As matters now stand, laws reflecting on signal piracy often apply only to piracy of programming originating within a country and ignore theft of services from programmers located in neighbouring countries. This has created a marketing scenario that sees Danish firms manufacturing pirate decoders for German viewers and German firms responding with piracy hardware sold to Danish viewers; times the total number of countries within Europe. Another topic for concern in the report: The way that British Sky Broadcasting (News Corp) has tied up through patent rights various encryption schemes, thereby creating for its own programming channels a form of international monopoly of both the encryption technology and the programming rights. The Green Paper skirts the issue of actually naming the accused party but everyone reading it knows they are slicing and dicing BSkyB.

True state of digital equipment delivery? Satellite receiver suppliers, cable TV set-top converter suppliers have repeatedly delayed shipments of new generation all-digital "boxes" for more than one year with no real indication the bottleneck in production capability is coming any closer to being resolved. Latest indication: Major cable operator TCI which has contract with General Instrument, says it will "now" begin receiving cable TV set-top digital converter boxes "late in third quarter" with "digital delivery of on-cable TV programming to begin late in fourth quarter." How far behind original schedule? Two full years, if they maintain this announced schedule.

BBC has completed first trial broadcast period using European DVB standard for terrestrial TV transmissions. BBC Labs built initial encoder and decoder units for trials, full scale field trials will following by mid-year.

Consumer Electronics

Apple computer clones, built under licence by new Motorola factory in Nanjing, China, will sell for US$1,200 (list) and be distributed primary outside of the USA. Apple is having a difficult time with 2nd quarter losses of US$700m against year ago 2nd quarter with profits of $73m.

Apple 2e, no longer in production, is basis for new Tiger Learning Computer to retail for US$150 as teaching tool for pre-schoolers. System uses cartridge based combination of hard and software, has 73-key keyboard, mouse and text-only Web browser for limited Internet access.

DVD product release "in time for 1996 Christmas buying season" continues to be major question mark. Hardware suppliers say they can be ready with players, software suppliers say they can have as many as 250 DVD movie titles ready but only if certain agreements are in place. Key issues that remain: How US Congress will treat DVD for copyright protection, and, whether software (read movie distributor) demands that video discs be electronically coded for different world regions will be accommodated. There are additional issues, including whether DVD's first swarm of players and discs will represent a "mature" technology or will it be an interim (such as first 12 month) "standard" that evolves still further soon after launch. Ideally, the standards agreed to will last one or two decades making any discs purchased early playable on machines sold in 2005 or even 1015. Not so ideally, hardware designers insist that the technology is evolving, should not be stagnated prematurely, and that they will be freer to improve on it if the "next" generations do not have to play original discs. This is the backward compatibility concern. Increasingly, even a late-96 launch of DVD on a world-wide scale begins to seem less and less likely.

Video and up to four audio channels, transmitted within a building (i.e., office, home) using standard two-wire telephone copper wires for a distance as great as 1068 metres? Isthmus Technology Group (Overland Park, Kansas) claims this with new technology it calls break through in semiconductor design. How good video? Studio quality is description. How good audio? Broadcast quality. Price? Too early to tell. Applications? Endless. Major disadvantage? It requires dedicated twisted pair circuit.

Advanced Photo Systems (APS), nomenclature describing electronic photography using chip or card storage of still photos, suddenly has many new products and features. Concept was pioneered by Kodak and Sony, allows still photos to be shot electronically and through viewfinder or monitor reviewed before printing or archiving. At recent Photo Marketing Association trade show, models ranged from under US$500 to more than $2,000. Typical street price of US$800 gets user 2.5" LCD display screen, 25+ photo storage capacity inbuilt, ability to download "shots" to computer hard drive, TV screen, or directly to printer. Accessories abound

Handwriting On The Wall

NEC in major North American publicity campaign headlines full page print media advertisement with: "***People sometimes ask why we no longer make televisions***" and then goes on with

"Televisions as we know them are a dying breed. The fact is,
it is only a matter of time before everything in your home
will be controlled by a centralised computer system.
In ten years, people will ask 'What are televisions?"

including new PC software allowing direct manipulation of photos (sizing, cropping, retinting) either while stored in camera or after moving storage to hard drive. Chinon has 8 photo storage model with internal 1-Mb memory that includes photo-editing software programme packaged with camera for US$499 and optional flash memory PC card of 16 Mb with capacity for 128 photos. Brand names: Sony, Yashica, Kodak, Minolta, Fuji, Casio, Chinon and others.

Three steps forward, one step backward. Cape Town, South African firm BayGen Power is sold out for months of production of its Freeplay AM/FM/shortwave radio which employs novel, patented "wind up generator" technology. One 30 second windup produces enough electrical power to operate set 40 minutes; windup generator is guaranteed for 6,000 windups, 10,000 hours of play or equivalent of 400 "D" cells. Complete radio set with built-in windup generator has US list price of $149. Firm will follow with windup flashlight and personal cassette player. Distribution at moment is limited to North America and Africa; obviously a marketing opportunity for South Pacific entrepreneurs here.

Study of 250,000 users of antenna-close-to-head cellular telephones over three year period finds mortality rates virtually identical to similar group using cellular telephones with antennas some distance away from head/body. Study was partially subsidised by World Health Organisation which summarised results with, "*WHO finds no clear evidence of link between cancer and exposure to microwave radiation from mobile phones*." In fact, mortality rate of those using close-to-head antennas was but 86% of those using mobile or other distant-antenna cellular communications.

Top ten firms granted patents by US authorities during 1995: 7 of 10 are Japanese firms (Canon was #2 with 1,088) while IBM was top patent grabber (1,383).

.**Intel**, prime mover in chip technology, believes "Golden Boom Years" are just ahead in home PC realm. Labelling last ten years as boom period for PC systems designed primarily for work applications, Intel believes rapid development of DVD, visual computing, Internet and high-powered multimedia technologies will drive the industry to global sales doubling by 1999. Intel cites the 1995 year end growth of Internet (10,000,000 world-wide) to more than 30,000,000 in 2000 as a major force that will drive development of a host of new "merged" technology applications all requiring the power and speed of computing chips. Virtually all leading edge PCs sold from late 1996 onward will include DVD capability, advanced multimedia chips, conferencing capability, 3D graphics and network communications capability.

Making money with Internet? Sony has plan. Sony Station Web site (http://www.sony.com) is selling portions of its display space for rates that vary between US$500,000 and US$1m for full year.

Beleaguered game suppliers badly hurt by drop in sales world-wide (CTD 9602, p. 14) are hopeful DVD format to hit market late this year will provide new marketing opportunities. Sega believes that its Saturn game platform will carry firm, at reduced earnings from past, to end of 1997 but plans entirely new format of games-plus platforms to follow. Next generation will include DVD playback, as method of tapping higher speed raw game data bases, as well as cable TV interface and Internet telephone modems to ensure any game distribution system that appeals to users can be tapped by their equipment. One side effect: Videogame platforms have tried hard to come in near US$300 for basic machines but with addition of DVD there is little chance one platform system can do everything they need to do for less than US$500.

MIT survey of 1,005 people in North America rated items "people cannot live without" and found as follows: #1 - a car, #2 - light bulb, #3 - telephone, #4 - TV, #5 - Aspirin, #6 - microwave, #7 - (hair) blow dryer, and #8 - PC. Sex and beer did not appear on the list respondents chose from (which tells you something about MIT researchers, or, North Americans).

Cable/Fibre/MMDS/Pay TV

Telecom NZ's decision to not pursue direct stock ownership in Sky (CTD 9602, p.15) manifested itself in unusually worded statements suggesting to some that Telecom believed it could, by its decision, call off the pending lawsuits. Ten days after the April 5th announcement, Telecom had still not made direct contact with attorneys for Clear and BellSouth, nor the firms themselves. Rather, it was releasing carefully worded statements to various press outlets that largely sought to emphasise not their failure to gain operational control of Sky but rather their decision to move ahead with their own cable rollout plans (CTD 9602, p. 12). Telecom's major weakness is a lack of cable programming. Agreements with Television New Zealand not withstanding,

ERECTION: 1, NON-ERECTION 3

US Fox Network accepted advertisement from California retail chain Clothestime but ABC, CBS and NBC declined. Controversial TV spot for women's garments featured unclad male strategically covered with small bit of cloth at genitals and spotlighted model in skin tight black pants and satin shirt. Camera cuts between woman's profile walking past male and the bit of cloth covering his private parts. Commercial, titled, "Natural Reaction" suggests male erection is occurring beneath cloth as male voice intones "Television viewers see murder, rape, incest, spousal and child abuse, prostitution and gay bashing on television so why can't you see a perfectly natural male reaction to a woman in tight black pants and a satin shirt?"

Telecom has not been active in pursuing programme sources for the network it is currently rolling out in areas of Wellington and Auckland. And prime in the programming arena are movies and sports; two areas which Sky has been able to control with contracts it has largely won through the influence of its two cable television shareholders TCI and Time Warner. Telecom claims it will offer 50 channels of programming to as many as 50,000 homes in the North Shore region of Auckland and had intended to include Sky's (HBO named) movie, sports and Orange channels in that programme mix. Whether any of these channels will now be a part of their hoped-for 50 channel universe is now unknown. That 50 channels might be on offer is not that unrealistic; Far North Cable TV serving Doubtless Bay communities recently passed the 25 channels of service mark and projects it will be past 45 channels by January 1.

Australian regulations governing permissible installation techniques for coaxial or fibre/coaxial networks will be significantly modified as act of new Federal government. Minister (Senator) Richard Alston announced April 26th that while the present federal regulations do allow Foxtel and Optus Vision to place cable TV lines overhead (suspended from existing power utility poles) without consulting the local councils, from July 1st the rules will change. More than a dozen councils in the Sydney and Melbourne areas have attempted to get court support to block the rollout of cable TV aerial lines. Optus Vision, in particular, has fought a number of court appeals and where the court appeals have been pending without resolution the rollout of cable TV service lines using aerial techniques has largely been halted. This is greatly complicating the orderly development of regional cable TV services. More recently Foxtel, which is a joint project of telephone operator Telstra and News Corp, has begun to utilise aerial cable techniques as well and justifying this move by claiming that in 30% of the suburban areas the existing Telstra ducts are already so filled with telephone cables as to preclude the addition of cable TV lines. Senator Alston is now suggesting that from July 1st, any firm proposing to utilise overhead (aerial cable) construction techniques must first answer the concerns of local councils before proceeding. Under the proposal, the cable operator will present his case and the council will present a rebuttal case to a facilitator where a decision will be made. The net result of this new "code" is likely to be a considerable slow down in the pace of rollout for cable TV in suburban regions of all major cities.

The Australian Federal Court has reaffirmed an October (1995) decision that cable operators are free to pick up off-air feeds from commercial and other broadcasters to carry their signals to cable subscriber homes. The Federation of Australia Commercial Television Stations had appealed the earlier decision which occurred just as Foxtel and Optus Vision were within days of launching their cable TV service packages. The original decision made it possible for both firms to carry channels 7, 9 and 10 programming as "free to air" services. The broadcasters appealed the decision and have now lost a second time. Australian copyright law is several decades old and has been the subject of review for more than five years. In losing the court decision, a spokesman for the broadcasters labelled the Broadcasting Services Act, "*outdated federal legislation. The broadcasters have a property right in their signals*" and called for a revamping of the present law.

Correction: CTD March 29th reported "*Now under construction Taupo Cablevision (Inc.) has selected General Instrument as a major supplier through New Zealand representative Maser Technology.*" Several readers have interpreted this to indicate Maser will supply GI brand electronics and other major component parts to Taupo Cablevision which CEO Ron Theaker advises, "*...is not totally correct.*" Taupo Cablevision is in fact cabling the town with cable and electronics imported directly from North America, has not yet selected its set-top converter source nor made a decision on headend electronics. Theaker notes, "*We will probably be purchasing equipment from a number of New Zealand suppliers, including Maser and others, but no firm purchase orders have yet been issued.*"

It may seem like a small thing - but, if major cable operator Time Warner loses this suit, it could cost it US$20m. Cable TV system operators routinely install amplifiers for apartment and office buildings inside of premises. To power the amplifiers, they simply located a convenient electrical outlet and plug in. A group of New York City building owners claim T-W has been "misappropriating electrical power" to run the amplifiers for its own benefit (i.e., they charge for the TV service but use building electrical power to provide it). A suit representing 5,000 buildings asks US$20m in punitive damages plus unspecified actual losses. Actual power usage by such an amplifier would typically be under US$.20 per month per amplifier.

A Teleputer?

Although MAC computers with the ability to tune and display TV signals have been available for a year or more, TV set manufacturers have not reciprocated; until now. Manufacturer Gateway, known for its PC units, has begun taking orders for a "31" Living Room Computer" which combines best of the television world with a top rate home computer system. Package consists of two major parts, several peripherals. Display screen (measuring 31.5" diagonally) is in typical TV set moulded container but contains only the display portion. In second container, sized like typical VCR, is the guts of the TV and computer system. Computer portion features 1.6 Gb hard drive, Pentium 120 MHz processor, 6X CD-ROM drive, 3.5" floppy drive and 28.8 kb internal fax modem. System is operated by remote (wireless) control package with keyboard and Field Mouse. TV display is actually Mitsubishi with VGA definition, 640x480 noninterlaced resolution utilising IDTV line interpolation technique. Space for addition of option (when available later this year) DVD player is included with this wrinkle: DVD player will feed monitor in RGB format bypassing normal RGB to RF modulator approach thereby giving MPEG-2 DVD display cleanest possible "studio quality" look. Price is US$3,499 to $4,699 depending upon options selected and at top end includes 16 software selections.

Other firms that are close to announcing "interactive TV sets" include Mitsubishi, Sony and Toshiba and Thomson while in the game world manufacturers Sega and Nintendo will offer Internet access capabilities with new game units. The Nintendo 64 is said to be designed to allow Web-cruising on Internet.

Thomson Consumer Electronics plans marketing test of high price end Genius II Theatre System which is hybrid home computer and multimedia entertainment system by year end. TCE believes that emergence of new hybrid home units requires some effort towards standards to settle interfacing between basic computer portion and often more complex home entertainment functions. One possibility: All video signals will end up being processed as RGB rather than as remodulated RF signals. This would resolve major technical difference between entertainment television and computer displays which presently rely upon different formats. RGB could be, with agreement, the "root" of either system.

Terrestrial Broadcasting

Radio Apparatus Licence Fees administered by Ministry of Commerce adopted new schedule February 16 replacing existing fees in Part A of the Third Schedule. The fee changes, Ministry claims, will reduce overall income by $1m per year and adjust fees to more fairly represent the costs associated with administering the spectrum for different user classes. For frequencies below 1 GHz using less than 250 kHz per transmitter, fees (old, then new) are $171/$225. For above 14 GHz using bandwidths of less than 30 MHz, $45/$90. For frequencies above 14 GHz, bandwidth greater than 30 MHz, $90/$180. All other fixed Service fees have either been reduced or remain the same. New categories for paging services, Aeronautical Mobile and Radiodetermination have been established. Details from Radio Spectrum Policy Group, Ministry of Commerce, Wellington.

Aotearoa TV commenced transmission of test pattern in Auckland on channel 35 April 26, is scheduled to begin programming today (1 May). Equipment and engineering has been provided by BCL Funding is for 90 day "test" but Morehu McDonald in BFM 1100 radio interview said, "*There is an understanding about rolling it over for another (*90) *period.*" Once on the air, it is unlikely to ever come off as long as funding through NZOA continues. Operation is slated to be 60% Maori, 40% English with normal schedule from 5PM to as late as 11PM daily. Station is targeting 'youth element' and organisers hope that use of Maori language on television will earn added respect for the language; "*If it is not on TV, it is not cool.*" Initial programme schedule: 5-6PM Kohanga Reo magazine format animation with Maori voice over; 6-7PM Youth Lifestyle covering fashions, trends, gigs; 7-7:30PM News (100% Maori); 7:30-8PM Current Affairs that will "mimic Paul Holmes"; 8-10 or 11PM will be movies concentrating on New Zealand produced products including Billy T James reruns. McDonald hopes that as digitally delivered channels become a reality for satellite distribution, their Auckland service will be delivered nation-wide through the facility of Television New Zealand. Aotearoa TV is located at level 3, 164 Parnell Rd (Auckland), tel (09) 356-6960 and fax (09) 356-7416.

United Christian Broadcasters is in process of shifting location to Radio Rhema building in upper Queen Street (Auckland). Facility has never been equipped for television but has all of the basic desirable design features that would lend it to being a suitable TV broadcast facility.

MAX TV has also moved, to Lion Place off Khyber Pass Road (Auckland). The building is named '601 Digital' (ex Vidcom building) and a new studio has been assembled.

Taranaki region TV channels have been or are being shifted and reassigned to make room for additional TV3 translators. At Poutoko TV3 has now appeared on channel 7; at Pukeiti TV1 now 7 to channel 5, TV3 has appeared on channel 11. At Opunake TV1 moving channel 5 to 8, TV3 appearing (unfortunately for them) on channel 1. At Mahoe, TV1 now 9 to channel 5, TV2 to stay on 11 and channel for TV3 still not selected. BCL is moving office from New Plymouth to Palmerston North.